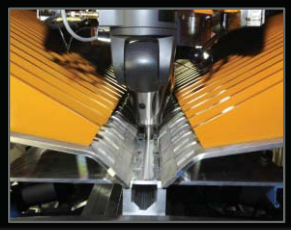
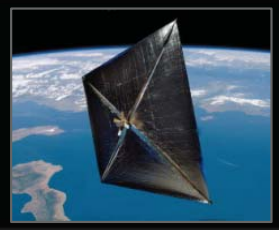
National Aeronautics and Space Administration

Marshall Space Flight Center

Presentation to Google



Deputy Director, Science &

Dr. Corky Clinton
Technology Office

www.nasa.gov

marshall

Marshall's Core Capabilities and Services

Space Transportation & Launch Systems

Propulsion Systems

Space Systems

Scientific Research

Traveling To and Through Space

Transportation & Propulsion Systems

Exploration Vehicle Development

Space Launch System
- Program Management
- Stages
- Avionics
- Spacecraft & Payload Integration
- Advanced Development
- Boosters
- Engines

Orion
- Launch Abort System Motor Support

Technology Advancement

Advanced Exploration
- Nuclear Cryogenic Propulsion Stage
- Liquid Propulsion Systems

Space Technology
- Composite Cryogenic Propellant Tank
- Cryogenic Propellant Transfer/Storage

Industry & Defense Partnerships

Defense
- NIRPS
- SWORDS

Industry
- COTS Program & Partnerships
- CCDEV Program & Partnerships

NIRPS
National Institute for Rocket Propulsion Systems

Living & Working in Space

Space Systems

Low-Earth Orbit

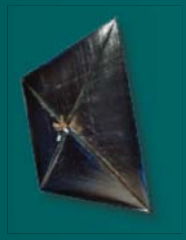
International Space Station
- Payload Ops Integration Center
- Payload Ops Integration Function
- Multi-use Payloads
- Materials Science Research Rack
- Microgravity Science Glovebox
- Environmental Control/Life Support
- ISERV
- Advanced Manufacturing Technology Demonstrations

Future Exploration

Life Support
- Atmosphere Resource Recovery
- Next-generation Life Support

Destination Systems
- Mighty Eagle
- Lunar Mapping & Modeling
- Autonomous Systems
- Nuclear Systems

Technology Demo
- Technology Demonstration Missions
- Centennial Challenges



Understanding Our World & Beyond

Solar System Universe

Astrophysics

Programs
- Chandra

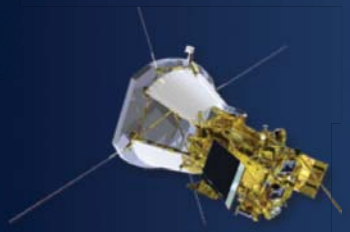
Instruments
- HOPE/HEROES
- Fermi/GBM
- SRG/ART-XC (with Russia)

Research/Technology
- Advance Mirror Technology Demo

Test
- James Webb Mirror & COCOA Test

Heliophysics

Instruments
- Hinode/XRT
- Solar Probe Plus/SWEAP
- SUMI, Hi-C Suborbital



Earth Science

Instruments
- ISERV
- HIRAD
- LIS
- AMPR
- MAPIR

Selected Projects
- SPoRT
- SERVIR
- ACE
- Public Health
- Climate Dynamics

Planetary Science

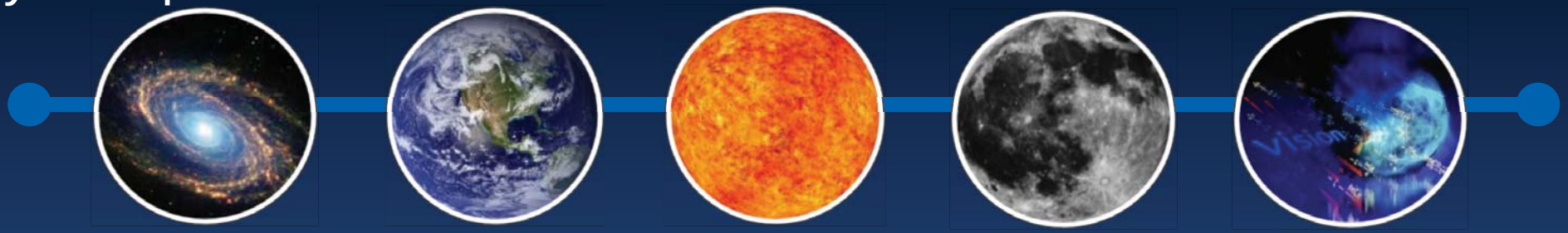
Programs
- Discovery & New Frontiers

STO Organizational Structure

Mission: ***Apply Marshall's unique capabilities to advance scientific understanding, knowledge application, and technical innovation, thus enabling a robust space economy and transformative exploration for the nation.***

Vision: Marshall's Science and Technology organization will be a pre-eminent choice for delivering scientific and technical solutions as we reach for new heights and reveal the unknown for the benefit of humankind.

Key Disciplines:

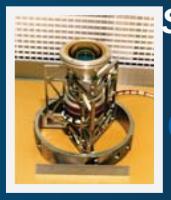


Astrophysics | Earth | Heliophysics | Planetary | Technology Development & Transfer

Earth Science Instruments

HIRAD (Hurricane Imaging Radiometer)

Flown on a WB-57 for the Hurricane & Severe Storm Sentinel (HS3) mission



ISERV (SERVIR Environmental Research and Visualization System)

Installed on ISS in 2012

Scheduled to be installed on ISS in 2015

LIS (Lightning Imaging Sensor)

NOTE: Other lightning instruments include TRMM LIS and LIP (Lightning Instrument Package)

AMPR (Advanced Microwave Precipitation Radiometer)

Flown on Earth Observing System (EOS) PM-1 platform

MAPIR (Marshall Airborne Polarimetric Imaging Radiometer

Flown on multiple airborne suborbital platforms, and in partnership with U of Tennessee.

Earth Science Project Areas

SERVIR

Uses a broad array of Earth-based satellite observations


Climate


Disasters


Health


Agriculture

Climate Dynamics

Advances understanding of climate variability on intra-seasonal (20–90 day) to near-decadal scales. Improves NASA climate model performance in quantifying and predicting these variations.

SPoRT (Short-term Prediction Research and Transition Center)

Uses multiple Earth-based satellite observations


Hurricanes

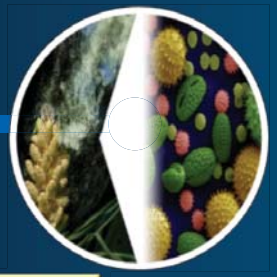

Drought


Tornadoes


Soil Moisture


Weather

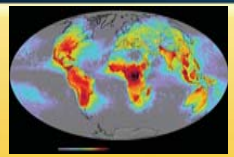
Public Health and Air Quality Programs



Uses data modeling and Earth-based satellite observations


Air Quality

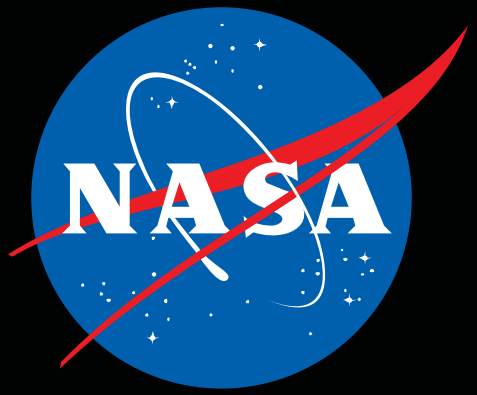

Disease Vectors


Lightning NOx

ACE (Arctic Collaborative Environment)

International partnership for information sharing to meet the challenges facing the Arctic

Working **Together** To Achieve Greater Societal Benefits.



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